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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,875	03/12/2004	Kurtis Chad Kelley	9453.0002-01	2511

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EXAMINER	
YUAN, DAH WEI D	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/798,875	KELLEY ET AL.	
	Examiner	Art Unit	
	Dah-Wei D. Yuan	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-34 and 36-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-34 and 36-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03122004,08042004,02252005*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

BATTERY INCLUDING CARBON FOAM CURRENT COLLECTORS

Examiner: Yuan S.N. 10/798,875 Art Unit: 1745 March 15, 2005

Election/Restrictions

1. Applicant's election without traverse of Group III-1, claims 27-34, in Paper filed February 25, 2005 is acknowledged. Claims 1-26,35 were canceled. Claims 36-52 were added.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 27-29,31,32,34,36,38-40,42 are rejected under 35 U.S.C. 102(e) as being anticipated by Amiel et al. (US 6,656,640 B1).

With respect to claims 27,32,36, Amiel et al. teach a battery comprising a housing (17), a tab (14) (a positive terminal), a nickel-plate steel disk (16) (negative terminal), an electrolytic solution and current collectors. The current collector is a three-dimensional conductive support, such as carbon foam, which is coated in a paste containing an electrochemically active material and a binder. The current collectors are connected to electrodes, including anode and cathode. See Column 1, Lines 23-40.

With respect to claims 28,29,31,38-40, Amiel et al. do not specifically disclose the porosity, electrical resistivity and density of the carbon foam. However, it is the position of the examiner that such properties are inherent, given that both Amiel et al. and the present application utilize similar carbon foam material. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claims 34,42, Amiel et al. teach the sue of nickel hydroxide as the coating material. See Example 1.

4. Claims 27-29,31,32,36,38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (US 5,972,538).

With respect to claims 27,32,36, Saito et al. teach a battery comprising a housing, an electrolytic solution and current collectors. A carbon foam is bonded to vitreous carbon (a chemically active material) with an electroconductive adhesive to prepare a current collector material. See Column 7, Lines 11-22. The disclosure of Saito et al. differs from Applicant's claims in that Saito et al. do not specifically discuss the essential components, such as positive terminal and negative terminal, of a battery. However, one of ordinary skill in the battery art would recognize these components are inherent in the operation and functionality of a battery.

With respect to claims 28,29,31,38-40, Saito et al. do not specifically disclose the porosity, electrical resistivity and density of the carbon foam. However, it is the position of the examiner that such properties are inherent, given that both Saito et al. and the present application utilize similar carbon foam material. A reference which is silent about a claimed invention's

features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference.* In re Robertson, 49 USPQ2d 1949 (1999).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 30,46,47,52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amiel et al. (US 6,656,640 B1) as applied to claims 27-29,31,32,34,36,38-40,42 above, and further in view of Ludwig (US 4,084,041).

Amiel et al. disclose a carbon foam current collector as described above in Paragraph 3. However, Amiel et al. do not disclose that current collector further contains graphite foam. Ludwig et al. teach a battery, wherein the carbon based porous conductive material consisting of graphite, felt, graphite foam and carbon foam. See Column 9, Lines 22-28. However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two materials, carbon foam and graphite foam in the battery of Amiel. It is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. In re Kerkhoven, 205 USPQ 1069, 1072. In addition, it would have been within the skill of the ordinary artisan to adjust the respective amount of the carbon foam and graphite foam in the current collector to yield an electrical resistivity value of between

about 100 μΩ–cm and about 2500 μΩ–cm. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

7. Claims 48-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amiel et al. (US 6,656,640 B1) as applied to claims 27-29,31,32,34,36,38-40,42 above, and further in view of Nagle et al. (US 6,670,039 B1).

Amiel et al. disclose a carbon foam current collector as described above in Paragraph 3. However, Amiel et al. do not disclose that current collector further contains carbonized wood and graphitized wood. Nagel et al. teach the carbonized wood produced may be used in applications where carbon foams are currently being employed. Specifically, the carbonized wood allows for higher stiffness than that found in carbon foams. The presence of graphitic phase (graphitized wood) in the carbonized wood is also documented in the Nagle. See Column 32, Line 50 to Column 33, Line 3; Column 34, Lines 29-38. Therefore, it would have been obvious to one of ordinary skill in the art to add carbonized wood to the current collector of Amiel et al., because Nagel teach the carbonized wood (along with graphitized wood) has better stiffness than that of carbon foam.

8. Claims 33,37,43-45are rejected under 35 U.S.C. 103(a) as being unpatentable over Amiel et al. (US 6,656,640 B1) as applied to claims 27-29,31,32,34,36,38-40,42 above, and further in view of James et al. (US 5,766,789).

Amiel et al. disclose a carbon foam current collector as described above in Paragraph 3. However, Amiel et al. do not disclose that current collector can bed used in a lead-acid battery. James et al. teach a lead-acid battery, wherein current collector is filled with an active paste that contains sulfated lead oxide as active material. In one embodiment, the current collector comprises titanium dioxide having Sn-Pb alloy, i.e., a lead current collector. The lead-acid battery remains favored for used such as starting internal combustion engines, electric vehicle motive power, as well as portable and emergency power for industrial and military applications. See Column 1, Lines 60 to Column 2, Line 13; Column 6, Lines 40-51; Claims 35-38. Therefore, it would have been obvious to one of ordinary skill in the art to use of the carbon foam current collector of Amiel on the lead-acid battery of James, Because James teaches the lead-acid battery as a favored power sources in various applications.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 27,28,31,32 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/326,257. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application and the '257 application both claim a battery comprising a positive current collector of carbon foam. The disclosure of '257 application differs from Applicant's claims in that '257 application teach the use of an insulating mat between the negative current collector and the positive current collector. However, it would have been obvious to one of ordinary skill in the art to add an insulator between the positive current collector and negative current collector to avoid short circuit of the battery.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

11. Claims 27,28,31,32,36,38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending

Application No. 10/183,471. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant application and the '471 application both claim a battery comprising an electrode (plate) and a current collector. The disclosure of '471 application differs from Applicant's claims in that '471 application does not disclose the presence of a positive terminal and a negative terminal in the battery. However, one of ordinary skill in the battery art would recognize that it is essential to have a positive terminal and a negative terminal in the structure and functionality of a battery.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
March 15, 2005